

**RISK EVALUATION  
LAKEWOOD CYANIDE  
LAKEWOOD, COLORADO  
TDD #T08-9403-0012**

**Prepared for**

**U.S. Environmental Protection Agency  
Emergency Response Branch  
Region VIII, Denver, Colorado**

**Prepared by**

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Technical Assistance Team  
Scott Keen, Project Officer**

**Date Submitted: March 24, 1994**

**RISK EVALUATION  
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LAKEWOOD, COLORADO  
TDD #T08-9403-0012**

**BACKGROUND**

On March 10, 1994, several discarded items were discovered next to a dumpster at 2500 Youngfield Road in Lakewood, Colorado. The items were discovered by Mr. Dennis Wedig of We-Dig Realty and Appraisal Services, one of several commercial tenants occupying the building at that address. Mr. Wedig believes the items were abandoned next to the dumpster during the week of March 1, 1994. The discarded items included a stainless steel sink, a large glass flask of a type used by laboratories, and a small (2 to 3-gallon) metal container labeled "potassium cyanide." Mr. Wedig notified the Colorado Department of Health (CDH), who notified the Lakewood Police Department and the Emergency Response Branch (ERB) of the U.S. Environmental Protection Agency (EPA) of the finding. Lakewood police placed the small container in a 55-gallon steel drum, which they locked in a shed on the property at 2500 Youngfield Road.

**RISK EVALUATION**

Youngfield Road runs in a north/south direction on the extreme west side of the City of Lakewood, Colorado. Located at 2500 Youngfield Road is a single-story office building that houses dental offices and Mr. Wedig's realty and appraisal business. This building and its relatively large parking area are situated on the east side of Youngfield Road. The trash dumpster for 2500 Youngfield Road is in the northeast corner of the lot (see Photo #2); less than 50 feet to the north of the dumpster is Zee's Cafe (see Photos #7 and #8); and less than 50 feet to the east of the dumpster, and separated from the building by a fence, are several residences (see Photo #5). On the opposite (west) side of Youngfield Road are several businesses, including the Mesa Veterinary Hospital, and a residential neighborhood (see Photo #6). In general, this neighborhood can be described as a busy commercial area closely surrounded by a residential neighborhood. There is considerable pedestrian and automobile traffic throughout the area.

The container labeled potassium cyanide was left next to a dumpster at 2500 Youngfield Road. Potassium cyanide (KCN) is most commonly used for the extraction of gold and silver from ores. It has also been used as an insecticide and for the elimination of coyotes, prairie dogs, and other perceived rodents. It is a white, amorphous solid that is soluble in water.

Potassium cyanide dust can cause toxic symptoms when inhaled. The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for potassium cyanide is 5 mg/m<sup>3</sup>. The Immediately Dangerous to Life and Health (IDLH) value for cyanide compounds is 50 mg/m<sup>3</sup>. Potassium cyanide is a highly alkaline salt and can cause caustic-type skin irritation and the formation of ulcers. The lowest published

lethal dose by human ingestion is 2.9 mg/kg (Sax 1984). For perspective, for a 60-lb child this lethal dose would be approximately 80 milligrams, or less than one-tenth of a gram.

When potassium cyanide is dissolved in and reacts with water, some hydrogen cyanide (HCN) is released. The amount of gaseous HCN generated by this reaction is generally too small to be considered hazardous unless the reaction occurs in a confined area where gases can accumulate; however, in acidic conditions, large amounts of highly toxic HCN would be released immediately. In addition to the toxic potential of HCN, it is highly flammable. Reactions of potassium cyanide with acids or oxidizing materials would create highly toxic HCN gas and/or explosive conditions.

At the setting at 2500 Youngfield Road, a small container of potassium cyanide, if not removed, could potentially create many hazards: children play in and pass through the commercial areas of this neighborhood; the container might be attractive for other uses, resulting in the emptying of its contents; it could be overlooked and damaged, causing its contents to spill; and/or the container could be placed with other incompatible chemicals. Many disastrous events could occur if an individual attempted to improperly dispose of the material: the potassium cyanide could be poured out and washed into the sewer where HCN could be generated; it could be mixed with other chemicals; and/or it could be poured onto the ground where animals, children, and adults could be exposed. In short, taking no action regarding the potassium cyanide in this residential/commercial setting could result in many potentially serious threats to human health and the environment.

## ACTIONS TAKEN

On Thursday, March 17, 1994, the Emergency Response Contract Services (ERCS) for the EPA/ERB removed the container of suspected potassium cyanide from the 2500 Youngfield Road location. It was taken to Building 11, an isolated building at the Federal Center occupied by the National Enforcement Investigations Center (NEIC) of the EPA. Wearing Level B personal protection, the ERCS contractor opened and sampled the container. All information on the container was recorded and given to Brian Nielsen, the Environmental Manager for the Lakewood Police Department. The Region VIII Technical Assistance Team (TAT) performed a qualitative test for cyanide and confirmed that the container held 15 to 20 lbs of a cyanide compound. The potassium cyanide container was enclosed in a plastic bag which was placed into a 55-gallon steel drum. The drum was then transferred to an area of Building 11 where environmental samples are held for the NEIC.

## REFERENCES

Sax, N. Irving, 1984, *Dangerous Properties of Industrial Materials*, Van Nostrand Reinhold Company.



**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Facing north from 2500 Youngfield Road.

Site: Lakewood Cyanide, 2500 Youngfield Road

City: Lakewood County: Jefferson State: CO

Date: March 17, 1994 Time: \_\_\_\_\_ Hours

Photographer: Scott Keen

Film: Kodak ASA: 200 Location of Negative: EPA-ERB

File: T08-9403-0012

Witness: Mike Zimmerman, EPA

Process: C-41

Paper: Fujicolor

PH-1





**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Facing east at dumpster at 2500 Youngfield Road.

Site: Lakewood Cyanide, 2500 Youngfield Road

City: Lakewood County: Jefferson State: CO

Date: March 17, 1994 Time: \_\_\_\_\_ Hours

Photographer: Scott Keen

Film: Kodak ASA: 200 Location of Negative: EPA-ERB

File: T08-9403-0012

Witness: Mike Zimmerman, EPA

Process: C-41

Paper: Fujicolor

PH-2





**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Drum and flask inside of shed at 2500 Youngfield Road.

Site: Lakewood Cyanide, 2500 Youngfield Road

City: Lakewood County: Jefferson State: CO

Date: March 17, 1994 Time: \_\_\_\_\_ Hours

Photographer: Scott Keen

Film: Kodak ASA: 200 Location of Negative: EPA-ERB

File: T08-9403-0012

Witness: Mike Zimmerman, EPA

Process: C-41

Paper: Fujicolor



**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Sink, funnel, cardboard box that were left with the discarded  
chemical and flask.

Site: Lakewood Cyanide, 2500 Youngfield Road

City: Lakewood County: Jefferson State: CO

Date: March 17, 1994 Time: \_\_\_\_\_ Hours

Photographer: Scott Keen

Film: Kodak ASA: 200 Location of Negative: EPA-ERB

File: T08-9403-0012

Witness: Mike Zimmerman, EPA

Process: C-41

Paper: Fujicolor

PH-4





**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Facing east at dumpster. Note rooftops of homes immediately  
east of asphalt lot.  
Site: Lakewood Cyanide, 2500 Youngfield Road  
City: Lakewood County: Jefferson State: CO  
Date: March 17, 1994 Time: \_\_\_\_\_ Hours  
Photographer: Scott Keen  
Film: Kodak ASA: 200 Location of Negative: EPA-ERB  
File: T08-9403-0012  
Witness: Mike Zimmerman, EPA  
Process: C-41  
Paper: Fujicolor

PH-5





**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Facing west across youngfield Road from dumpster at 2500  
Youngfield Road.  
Site: Lakewood Cyanide, 2500 Youngfield Road  
City: Lakewood County: Jefferson State: CO  
Date: March 17, 1994 Time: \_\_\_\_\_ Hours  
Photographer: Scott Keen  
Film: Kodak ASA: 200 Location of Negative: EPA-ERB  
File: T08-9403-0012  
Witness: Mike Zimmerman, EPA  
Process: C-41  
Paper: Fujicolor

PH-6





**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: From southwest corner of lot at 2500 Youngfield Road; facing  
northeast.  
Site: Lakewood Cyanide, 2500 Youngfield Road  
City: Lakewood County: Jefferson State: CO  
Date: March 17, 1994 Time: \_\_\_\_\_ Hours  
Photographer: Scott Keen  
Film: Kodak ASA: 200 Location of Negative: EPA-ERB  
File: T08-9403-0012  
Witness: Mike Zimmerman, EPA  
Process: C-41  
Paper: Fujicolor

PH-7





**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Facing north along Youngfield Road from 1500 Youngfield Road.

Site: Lakewood Cyanide, 2500 Youngfield Road

City: Lakewood County: Jefferson State: CO

Date: March 17, 1994 Time: \_\_\_\_\_ Hours

Photographer: Scott Keen

Film: Kodak ASA: 200 Location of Negative: EPA-ERB

File: T08-9403-0012

Witness: Mike Zimmerman, EPA

Process: C-41

Paper: Fujicolor

PH-8





**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Opening the container labeled potassium cyanide.

Site: Lakewood Cyanide, Building 11, Federal Center

City: Lakewood County: Jefferson State: CO

Date: March 17, 1994 Time: \_\_\_\_\_ Hours

Photographer: Scott Keen

Film: Kodak ASA: 200 Location of Negative: EPA-ERB

File: T08-9403-0012

Witness: Mike Zimmerman, EPA

Process: C-41

Paper: Fujicolor

PH-9





**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Reading and recording information on the container label.

Site: Lakewood Cyanide, Building 11, Federal Center

City: Lakewood County: Jefferson State: CO

Date: March 17, 1994 Time: \_\_\_\_\_ Hours

Photographer: Scott Keen

Film: Kodak ASA: 200 Location of Negative: EPA-ERB

File: T08-9403-0012

Witness: Mike Zimmerman, EPA

Process: C-41

Paper: Fujicolor

PH-10



**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Collecting a sample from the container.

Site: Lakewood Cyanide, Building 11, Federal Center

City: Lakewood County: Jefferson State: CO

Date: March 17, 1994 Time: \_\_\_\_\_ Hours

Photographer: Scott Keen

Film: Kodak ASA: 200 Location of Negative: EPA-ERB

File: T08-9403-0012

Witness: Mike Zimmerman, EPA

Process: C-41

Paper: Fujicolor

PH-11





**OFFICIAL PHOTOGRAPH  
ENVIRONMENTAL PROTECTION AGENCY**

Subject: Contents of container labeled as potassium cyanide.

Site: Lakewood Cyanide, Building 11, Federal Center

City: Lakewood County: Jefferson State: CO

Date: March 17, 1994 Time: \_\_\_\_\_ Hours

Photographer: Scott Keen

Film: Kodak ASA: 200 Location of Negative: EPA-ERB

File: T08-9403-0012

Witness: Mike Zimmerman, EPA

Process: C-41

Paper: Fujicolor

PH-12